

Lower Voltage Ceramic Disc Capacitors 2 kV_{DC} to 7.5 kV_{DC}


RoHS
COMPLIANT

FEATURES

- Low losses
- High capacitance in small sizes
- High stability
- Radial leads
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Lighting ballasts
- SMPS
- DC and pulse high voltage

DESIGN

The capacitors consist of a ceramic disc of which both sides are silver-plated. Connection leads are made of tinned copper having diameters of 0.025" (0.64 mm) or 0.032" (0.81 mm).

The capacitors may be supplied with radial kinked or straight leads having lead spacing of 0.250" (6.35 mm) or 0.375" (9.5 mm) or 0.500" (12.7 mm).

The standard tolerances are $\pm 10\%$ or $\pm 20\%$.

Coating is made of resin coating or flame retardant epoxy resin in accordance with "UL 94 V-0".

CAPACITANCE RANGE

10 pF to 0.10 μ F

RATED VOLTAGE

2 kV_{DC}
3 kV_{DC}
6 kV_{DC}
7.5 kV_{DC}

DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

2 kV_{DC} 3500 V_{DC}, 2 s
3 kV_{DC} 5000 V_{DC}, 2 s
6 kV_{DC} 10 500 V_{DC}, 2 s
7.5 kV_{DC} 11 250 V_{DC}, 2 s

CERAMIC DIELECTRIC

C0G, U2J, R3L (Class 1)
X7R, X5F, X5S, Y5S, Y5U, Y5V, Z5U (Class 2)

LEAD OFFSET "LO"	
NOMINAL	~ THICKNESS - 0.100"
	0.07" (1.8 mm) -565R20GAP10
EXCEPTION	0.08" (2.0 mm) -565R30GASS20
	0.10" (2.54 mm) -565R30GASS33

QUICK REFERENCE DATA						
DESCRIPTION	VALUE					
Ceramic Class	1	1	2	2	2	2
Ceramic Dielectric	U2J, R3L	C0G, U2J, R3L	X7R, Y5S, Y5U, Z5U, Y5V	X7R, Y5S, Y5U, Z5U, Y5V	X5F, X5S, Y5U, Z5U	X5F, Y5U, Z5U
Voltage (V _{DC})	3000	6000	2000	3000	6000	7500
Min. Capacitance (pF)	10	10	100	47	100	100
Max. Capacitance (pF)	33	47	100 000	10 000	10 000	2500
Mounting	Through hole					

INSULATION RESISTANCE

2 kV_{DC} min. 10 000 M Ω
3 kV_{DC} min. 50 000 M Ω
6 kV_{DC} min. 75 000 M Ω
7.5 kV_{DC} min. 200 000 M Ω

TOLERANCE ON CAPACITANCE

$\pm 10\%$, $\pm 20\%$, -20% to +80%

DISSIPATION FACTOR

0.2 % max. at 1 MHz; 1 V
2.0 % max. at 1 kHz; 1 V

CATEGORY TEMPERATURE RANGE

-25 °C to +85 °C

CLIMATIC CATEGORY ACC. TO EN60068-1

25/085/21

OPERATING TEMPERATURE RANGE

-25 °C to +105 °C



ORDERING INFORMATION, CERAMIC 2 kV_{DC}							
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE
					AWG	INCH (mm)	
X7R							
100	± 10	0.330 (8.4)	0.190 (4.8)	0.250 (6.4)	20	0.032 (0.81)	564R20TST10
220			0.180 (4.6)				564R20TST22
330			0.170 (4.3)				564R20TST33
470			0.185 (4.7)				564R20TST47
560			0.170 (4.3)				564R20TST56
680			0.175 (4.4)				564R20TST68
1000		0.430 (10.9)	0.160 (4.1)				564R20TSD10
1500		0.460 (11.7)	0.170 (4.3)				564R20TSD15
1800		0.530 (13.5)	0.170 (4.3)				564R20TSD18
2200		0.530 (13.5)	0.160 (4.1)				564R20TSD22
2700		0.680 (17.3)	0.170 (4.3)				564R20TSD27
3300							564R20TSD33
3900							564R20TSD39
4700							564R20TSD47
Y5S							
1000	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	20	0.032 (0.81)	564R20TSSD10
1500		0.400 (10.2)	0.170 (4.3)				564R20TSSD15
1800		0.430 (10.9)					564R20TSSD18
2200		0.460 (11.7)					564R20TSSD22
2700		0.530 (13.5)					564R20TSSD27
3300		0.175 (4.4)	0.170 (4.3)				564R20TSSD33
3900							564R20TSSD39
4700							564R20TSSD47
5600		0.680 (17.3)	0.375 (9.5)				564R20TSSD56
6800		0.720 (18.3)					564R20TSSD68
Y5U							
1000	± 20	0.330 (8.4)	0.170 (4.3)	0.250 (6.4)	20	0.032 (0.81)	564R20GAD10
1500		0.330 (8.4)	0.170 (4.3)				564R20GAD15
Z5U							
1800	± 20	0.360 (9.1)	0.170 (4.3)	0.250 (6.4)	20	0.032 (0.81)	564R20GAD18
2200		0.400 (10.2)	0.175 (4.4)				564R20GAD22
2700		0.430 (10.9)					564R20GAD27
3300		0.490 (12.4)					564R20GAD33
3900		0.170 (4.3)					0.170 (4.3)
4700			564R20GAD47				
6800			564R20GAD68				
0.010 μF		0.560 (14.2)	0.375 (9.5)				564R20GAD68
0.010 μF		0.680 (17.3)					564R20GAS10
Y5V							
0.01 μF	± 20	0.620 (15.7)	0.170 (4.3)	0.375 (9.5)	20	0.032 (0.81)	564R20GASS10
0.05 μF		0.950 (24.1)	0.174 (4.4)		20		564R20GAS50
0.10 μF		0.950 (24.1)	0.240 (6.1)		22		0.025 (0.64)

TAPE AND REEL OPTIONS

To specify tape and reel, add two letter suffix to the ordering code (for details of the packaging code see general section of the catalog).



ORDERING INFORMATION, CERAMIC 3 kV _{DC}										
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE			
					AWG	INCH (mm)				
U2J (N750)										
10	± 20	0.330 (8.4)	0.210 (5.3)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ10			
12			0.210 (5.3)				564R30GAQ12			
15			0.180 (4.6)				564R30GAQ15			
R3L (N2200)										
22	± 20	0.330 (8.4)	0.200 (5.1)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ22			
27			0.190 (4.8)				564R30GAQ27			
33			0.170 (4.3)				564R30GAQ33			
X7R										
47	± 20	0.330 (8.4)	0.230 (5.8)	0.250 (6.4)	20	0.032 (0.81)	564R30GAQ47			
56			0.190 (4.8)				564R30GAQ56			
68			0.200 (5.1)				564R30GAQ68			
100			0.180 (4.6)				564R30GAT10			
150			0.190 (4.8)				564R30GAT15			
220			0.175 (4.4)				564R30GAT22			
270			0.180 (4.6)				564R30GAT27			
330			0.175 (4.4)				564R30GAT33			
390			0.180 (4.6)				564R30GAT39			
470			0.175 (4.4)				564R30GAT47			
680	± 10	0.400 (10.2)	0.180 (4.6)	0.375 (9.5)	20	0.032 (0.81)	564R30TST68			
1000			0.175 (4.4)				564R30TSD10			
1500			0.490 (12.5)				564R30TSD15			
1800			0.185 (4.7)				564R30TSD18			
2200			0.530 (13.5)				564R30TSD22			
2700			0.185 (4.7)				564R30TSD27			
3300			0.170 (4.3)				564R30TSD33			
3900			0.185 (4.7)				564R30TSD39			
4700			0.175 (4.4)				564R30TSD47			
6800			0.900 (22.9)				564R30TSD68			
Y5S										
1000	± 20	0.400 (10.2)	0.190 (4.8)	0.250 (6.4)	20	0.032 (0.81)	564R30TSSD10			
1500		0.460 (11.7)					564R30TSSD15			
1800		0.490 (12.4)					564R30TSSD18			
2200		0.530 (13.5)					564R30TSSD22			
2700		0.560 (14.2)					564R30TSSD27			
3300		0.620 (15.7)	0.185 (4.7)	0.375 (9.5)	564R30TSSD33					
3900		0.680 (17.3)	564R30TSSD39							
4700		0.790 (20.0)	0.190 (4.8)		564R30TSSD47					
5600		0.900 (22.9)	0.205 (5.2)		564R30TSSD56					
6800		0.205 (5.2)	564R30TSSD68							
Y5U										
680	± 20	0.330 (8.4)	0.175 (4.4)	0.250 (6.4)	20	0.032 (0.81)	564R30GAT68			
Z5U										
1000	± 20	0.330 (8.4)	0.195 (5.0)	0.250 (6.4)	20	0.032 (0.81)	564R30GAD10			
1500		0.360 (9.1)	0.190 (4.8)				564R30GAD15			
1800		0.400 (10.2)					564R30GAD18			
2200		0.430 (10.9)					564R30GAD22			
2700		0.460 (11.7)					0.200 (5.1)	564R30GAD27		
3300		0.490 (12.4)		0.185 (4.7)			564R30GAD33			
3900		0.530 (13.5)	564R30GAD39							
4700		0.620 (15.7)	0.195 (5.0)				564R30GAD47			
6800		0.680 (17.3)	0.375 (9.5)				564R30GAD68			
8200		0.185 (4.7)					564R30GAD82			
0.010 μF		0.720 (18.3)		564R30GAS10						
0.020 μF		0.720 (18.3)		0.265 (6.7)			22	0.025 (0.64)	565R30GASS20	
0.033 μF		0.900 (22.9)		0.240 (6.1)			22	0.025 (0.64)	565R30GASS33	
Y5V										
0.010 μF		± 20	0.720 (18.3)	0.185 (4.7)			0.375 (9.5)	20	0.032 (0.81)	564R30GASS10

TAPE AND REEL OPTIONS

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ORDERING INFORMATION, CERAMIC 6 kV _{DC}							
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE
					AWG	INCH (mm)	
C0G (NP0)							
10	± 20	0.400 (10.2)	0.220 (5.6)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ10
U2J (N750)							
22	± 20	0.460 (11.7)	0.240 (6.1)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ22
R3L (N2200)							
33	± 20	0.400 (10.2)	0.230 (5.8)	0.375 (9.5)	20	0.032 (0.81)	564R60GAQ33
47		0.460 (11.7)	0.205 (5.2)				564R60GAQ47
X5F							
100	± 20	0.400 (10.2)	0.240 (6.1)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT10
220			0.265 (6.7)				564R60GAT22
X5S							
330	± 20	0.400 (10.2)	0.260 (6.6)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT33
Y5U							
470	± 20	0.400 (10.2)	0.265 (6.7)	0.375 (9.5)	20	0.032 (0.81)	564R60GAT47
560			0.240 (6.1)				564R60GAT56
Z5U							
1000	± 20	0.400 (10.2)	0.270 (6.9)	0.375 (9.5)	20	0.032 (0.81)	564R60GAD10
1500		0.460 (11.7)	0.280 (7.1)				564R60GAD15
2200		0.530 (13.5)	0.240 (6.1)				564R60GAD22
3300		0.620 (15.7)	0.260 (6.6)				564R60GAD33
4700		0.790 (20.0)					564R60GAD47
0.010 µF		0.950 (24.1)	0.250 (6.4)				564R60GAS10

ORDERING INFORMATION, CERAMIC 7.5 kV _{DC}							
C (pF)	TOL. (%)	D DIAMETER INCH (mm)	T THICKNESS INCH (mm)	LS LEAD SPACE INCH (mm)	WIRE SIZE		ORDERING CODE
					AWG	INCH (mm)	
X5F							
100	± 20	0.530 (13.5)	0.310 (7.9)	0.500 (12.7)	20	0.032 (0.81)	564R75GAT10
470		0.620 (15.7)	0.270 (6.9)				564R75GAT47
Y5U							
1000	+ 80/- 20	0.620 (15.7)	0.320 (8.1)	0.500 (12.7)	20	0.032 (0.81)	564R75GAD10
Z5U							
2500	+ 80/- 20	0.620 (15.7)	0.280 (7.1)	0.500 (12.7)	20	0.032 (0.81)	564R75GAD25



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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9